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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/603,184	06/26/2000	Hirohisa Suzuki	81784.0211	3365

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EXAMINER

MILLER, BRANDON J

ART UNIT	PAPER NUMBER
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2683

DATE MAILED: 11/20/2002

9

Please find below and/or attached an Office communication concerning this application or proceeding.

991

Office Action Summary

Application No.

09/603,184

Applicant(s)

SUZUKI ET AL.

Examiner

Brandon J Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Romesburg in view of Phillips.

Regarding claim 1 Romesburg teaches a noise cancel circuit for removing noise components in a detected radio signal (see abstract and col. 3, lines 39-44). Romesburg does not teach an interpolation circuit for performing interpolation processing on a detected radio signal or during generation of a pulse noise, a noise portion of a detected radio signal is interpolated by an output signal. Phillips teaches an interpolation circuit for performing interpolation processing on a detected signal (see col. 29, lines 24-25), generation of a pulse noise (see col. 17, lines 34-36), and a portion of a detected signal that is interpolated by an output signal (see col. 28, lines 65-66, col. 29, lines 23-24 and FIG. 9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Romesburg adapt to include an interpolation circuit for performing interpolation processing on a detected radio signal or during generation of a pulse noise, a noise portion of a detected radio signal is interpolated by an output signal because this would allow for suppression of periodic noise superimposed on an information signal.

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Regarding claim 2 Phillips teaches an interpolation circuit that executes spline interpolation (see col. 29, lines 8-9).

Regarding claim 3 Romesburg teaches a noise detection circuit for detecting a noise portion of a detected radio signal (see abstract and col. 3, lines 39-44). Romesburg also teaches a noise portion of a detected radio signal that is correlated according to an output signal from a noise detection circuit (see col. 6, lines 34-44 & 49-51 and FIG. 3). Romesburg does not teach interpolating a detected radio signal according to an output signal. Phillips teaches an interpolation circuit for performing interpolation processing on a detected signal (see col. 29, lines 24-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Romesburg adapt to include interpolating a detected radio signal according to an output signal because this would allow for suppression of periodic noise superimposed on an information signal.

Regarding claim 4 Romesburg teaches a selection circuit for selecting either the output of a signal or a detected radio signal and a selection circuit that is controlled according to an output signal from a noise detection circuit (see col. 7, lines 4-7, col. 11, lines 57-59 and FIG. 3). Phillips teaches an interpolation circuit (see col. 29, lines 24-25).

Regarding claim 5 Romesburg and Phillips teach a device as recited above except for an interpolation circuit that performs interpolation processing and outputs an interpolation signal regardless of presence or absence of noise components. Phillips further teaches many forms of an interpolation circuit and interpolating a signal in the absence of noise components (see col. 28, lines 65-66, col. 29, lines 23-24 and FIG. 9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Romesburg and Phillips adapt to

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include an interpolation circuit that performs interpolation processing and outputs an interpolation signal regardless of presence or absence of noise components because this would allow for improved transmission of an information signal transmitted from a radiotelephonic device.

Regarding claim 6 Romesburg teaches a first delay circuit for delaying a detected radio signal and supplying a delayed signal to a selection circuit (see abstract and col. 7, lines 18-25). Romesburg also teaches using multiple variable delay elements for delaying a signal (see col. 10, lines 20-22). Phillips teaches an interpolation signal and an interpolation circuit (see col. 28, lines 65-66, col. 29, lines 23-24 and FIG. 9).

Regarding claim 7 Romesburg teaches a delay circuit that is disposed in a processing stage prior to an autocorrelation circuit (see col. 8, lines 39-44). Phillips teaches an interpolation circuit (see col. 28, lines 65-66, col. 29, lines 23-24 and FIG. 9).

Regarding claim 8 Romesburg teaches a delay time that corresponds to a sum of processing time of an autocorrelation circuit and a delay time of multiple delay circuits (see col.10, lines 17-22). Phillips teaches an interpolation processing (see col. 28, lines 65-66, col. 29, lines 23-24 and FIG. 9).

Regarding claim 9 Romesburg teaches a delay time of a delay circuit that corresponds to a difference obtained by subtracting an estimate signal from a time delay between generation and detection of noise (see abstract). Romesburg does not teach a difference obtained by subtracting an interpolation processing time from a time delay between generation and detection of a pulse noise. Phillips teaches interpolation processing (see col. 28, lines 65-66, col. 29, lines 23-24 and FIG. 9) and generation of a pulse noise (see col. 17, lines 34-36). It would have been obvious to

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one of ordinary skill in the art at the time the invention was made to make the Romesburg adapt to include a difference obtained by subtracting an interpolation processing time from a time delay between generation and detection of a pulse noise because this would allow for suppression of periodic noise superimposed on an information signal.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

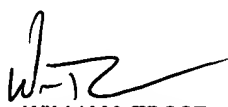
Tokumo U.S Patent No. 5,734,978 discloses a noise suppression system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon J Miller whose telephone number is 703-305-4222. The examiner can normally be reached on Mon.-Fri. 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 703-308-5318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

November 17, 2002


WILLIAM TROST
SUPERVISORY PATENT EXAMINER
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